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Marine Bioacoustics: Back to the Future

Charles H. Greene
Kohala Center
P.O. Box 437462
Kamuela, HI 96743
phone: (607) 275-1662 fax: (607) 254-4780 e-mail: chg2@cornell.edu

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LONG-TERM GOALS

The primary goal of our project is to provide advanced undergraduates, graduate students, and postdoctoral investigators with a broad understanding of ocean acoustics as well as the techniques used to study the ecology of marine animals *in situ*. By bringing together many of the top researchers in marine bioacoustics, biological oceanography, and marine biology, we provide students with a unique opportunity to work side by side with world experts using state-of-the-art tools and technologies. A secondary goal of the project is to provide a setting for developing and testing new technologies. In this manner, it serves as a research magnet, attracting leading scientists to conduct their own research in a creative teaching and learning environment that catalyzes interactions across the various disciplines associated with Biacoustical Oceanography.

OBJECTIVE

To provide students with a broad understanding of the acoustic techniques used to study the distribution and behavior of marine animals in the context of their physical/chemical/biological environment.

APPROACH

Through lectures, demonstrations, and field exercises, we provide students with a unique opportunity to learn and work side by side with top scientists using state-of-the-art bioacoustic tools and techniques.

WORK COMPLETED

Twelve undergraduate students were trained in an intensive, 3-week course in Conservation Oceanography offered on the Big Island of Hawaii during Winter 2008. Two of the weeks focused on the use of acoustic methods in studying the conservation biology of exploited fish stocks and endangered cetacean and sea turtle populations



Figure 1: Dr. Adam Frankel demonstrates real-time acoustic tracking of humpback whales.

RESULTS

Highlights of student experiences include:

1. Setting up an acoustic listening station and conducting real-time acoustic tracking studies (Figure 1),
2. Learning how to use spectrograms for classifying underwater sounds,
3. Learning how to use acoustic localization and tracking software,
4. Learning how to acoustically tag and track Hawaiian gamefish.

IMPACT/APPLICATIONS

Students from around the world come to these courses because they provide the best training available in Marine Bioacoustics. Student participants in this year's course represented the following countries: Korea (1), Japan (2), United States (9). This brings our total numbers of students since 1993 up to 178 students from 26 different countries. Our courses have acted as research magnets, attracting top scientists to integrate their own research with our educational program. Alumni from our courses have become national and international leaders in the fields of Marine Bioacoustics and Bioacoustical Oceanography.

RELATED PROJECTS

None